



07 September 2023

To: Brian Hayes
Recreation Director
City of Bel Aire

From: Brad Ward, PE

Reference: City of Bel Aire
Swimming Pool

ASSESSMENT OF EXISTING CONDITIONS

Existing Conditions

The existing pool is an 'L' shaped pool 30'-0" wide and 75'-0" long on each leg with a 4,500 square foot total surface area. The pool was constructed in 2005. The northwest end of the pool is zero entry meeting ADAAG requirements. The pool does not exceed 5'-6" depth and there are no diving boards. The pool was constructed with poured in place concrete with a painted plaster finish, and a concrete deck around the perimeter of the pool. The water circulation system consists of return inlets around the perimeter walls of the pool. The location of the return inlets was not visible at the time of the site visit in August a week after closing the pool because of algae. There are six main drains located on the bottom of the pool and skimmers spaced around the perimeter of the pool for surface drainage. There are underwater lights in the pool walls. The pool deck does drain away from the pool and is in good condition. The main circulation pump failed at the end of the season and is noted to be 260 gpm minimum on the original plans. The pool is considered more of a development/residential style of pool as opposed to a typical commercial pool. Based on standard occupancy capacity requirements the pool could accommodate 100 - 150 people. There is a trench drain between the building and the pool for water drainage away from the building and pool.

From our earlier discussion it is understood that during construction a portion of the pool did heave (concrete lifted up) due to a wet spring. The pool was repaired prior to putting the pool into operation. There is no perimeter foundation drainage system around the pool nor was the pool ballasted to prevent upheaval if the pool is empty. For this type of installation, which is very common, it is recommended to keep a minimum of 2-3 feet of water in the pool at all times, the weight of the water prevents upheaval. For winterization the pool would be drained to below the return inlets to allow the piping from the pump to the pool to drain. Over time a few cracks in the floor have developed and have been repaired, which is common in outdoor pools due to expansion and contraction of the soils and concrete. Likewise the PVC piping may split or pull apart at fittings due to expansion and contraction and this pipe being installed within the frost zone (36" deep). A section of pipe (and deck) was repaired off the southwest end of the pool a few years ago due to this. It was obvious at the time of the site visit that the pool did not have any leaks.

The water circulation system is fairly simple and standard system using a single circulation pump, basket filter, sand filter, and chemical feeder. The unusual item on this pool is that there are six (6) main drains in the floor, typically there are only two. Standard turnover rate on a public pool is 6-8 hours. The turnover rate is how long it takes to circulate the entire volume of water in the pool through



the filtration system. The turnover rate was not calculated, but the 260 gpm noted on the original plans should be within normal standards on this size of pool. As a note, the State of Kansas does not have any formal design standards for pools, the health department only requires the water quality to be monitored and maintained. Most designer's utilize national design standards if a local or state code doesn't exist. Two items to verify are the grates on the drains do have a lifespan due to a federal law (Virginia Graeme Baker Act) and they may need to be changed out and since the drains are directly piped to the pump there needs to be vacuum breaker emergency shutdown (Vac-A-Lert) installed on the system. Since there are six drains the likelihood of having all the drains blocked is extremely low but the safety does need to be in place.

General Comments

Pools can be constructed in numerous different ways with a variety of different finishes but all require periodical maintenance that, at times, can be fairly expense. Commercial pools require more maintenance than residential pools just because of more people, abuse, and chemical usage. Larger pools are typically poured in place concrete, gunite, or shotcrete with a painted, plaster, or tile finish. Smaller pools can be vinyl, fiberglass, or even stainless steel. Exterior pools experience a lot of different temperature and chemical exposures requiring a little more maintenance than indoor pools. It is not uncommon to have to repaint, patch plaster, or regrout tile every seven (7) years on average. Vinyl liners have a similar lifespan. Circulation pumps have an average lifespan of 7-10 years. Sand filters usually don't require the sand to be changed out as long as normal backwashing occurs. Some of the plastic components (inlets, skimmers, grates, lids, etc.) may have to be changed out periodically due to UV and chemical exposure making the plastic brittle. Since the pool is not usually used after sunset, I would recommend removing the underwater lights and patching the walls when the plaster finish is redone. Underwater lights are a leak waiting to happen. If afterhours swimming is desired I would recommend adding overhead lights around the perimeter of the deck which also will improve security lighting.

Overall the pool is in good condition and has been maintained well. A plaster refinish does need to occur in the next year or two.